Brown, Katherine

From: Brown, Katherine
Sent: Monday, April 29, 2013 9:29 AM
To: Kissinger, Lon; Fordham, Tami; Davis, Michelle V.
Cc: Shaw, Hanh; Godsey, Cindi; Thomas, Sally; Parkin, Richard
Subject: RE: Fish, Shellfish, and Marine Mammal Consumption Rates for Villages Bordering Cook Inlet

Thanks so much Lon. I know you've seen Seldovia's 2013 draft Cook Inlet Tribes Consumption Assessment, and also EPA's 2003 Survey of Chemical Contaminants in Cook Inlet and ATSDR's 2009 Cook Inlet Health Consultation. How do those data/analyses fit in?

From: Kissinger, Lon
Sent: Friday, April 26, 2013 4:32 PM
To: Brown, Katherine; Fordham, Tami; Davis, Michelle V.
Subject: Fish, Shellfish, and Marine Mammal Consumption Rates for Villages Bordering Cook Inlet

Hi,

I'm obviously not familiar with permitting for Cook Inlet, but I did want to share some initial analysis on seafood consumption and risk assessment for Alaska Natives using Cook Inlet. I look forward to meeting with you to learn more about the permitting process. I also hope to gain further insights which may help refine my initial analysis and enhance any utility it may have in developing Cook Inlet permits.

The Alaska Department of Fish and Game, Division of Subsistence, conducts well run harvest surveys on Native Alaskan villages throughout Alaska. Data are available on several villages bordering Cook Inlet, including: Kenai, Tyonek, Nanwalek, Port Graham and Seldovia. Data from the harvest surveys are available on the web at: http://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=main.home.

The website has an option to download data into Excel spreadsheets, I went through the available data on the aforementioned Cook Inlet villages, and transcribed per capita harvest rates in pounds per year for salmon, non-salmon fish, marine invertebrates, and marine mammals. The results for non-salmon fish are overestimates of what might be taken from Cook Inlet, as they include some fresh water species. I converted the pounds per year harvested to grams per day harvested. Obviously, consumption rates are less than harvest rates, as some harvest may be given away, sold, or used to feed dogs. There is also a cleaning loss factor to convert harvest weight to consumed food. The Superfund Program, Exposure Factors Handbook suggests value of 0.5 to convert harvest weight to edible tissue for fish based on a 1987 paper by Wolfe and Walker on Alaska Native harvest rates reviewed in the EFH. This conversion factor has been used to develop a preliminary estimate of grams per day consumed per person.

Note that these results include individuals that do not consume the resource. EPA Region 10 risk assessors generally use consumption rates for individuals that are consumers of the resource, as inclusion of non-consumers dilutes estimates of exposure to seafood contaminants and consequent risk.

I am not sure how AWQC are used in the Cook Inlet permitting process. Alaska's Ambient Water Quality Criteria are based on a consumption rate of 6.5 grams per day. Clearly, the analysis show consumption well in excess of this value. Further, AWQC may be set using upper percentile estimates of consumption, not per capita rates.

It should also be kept in mind that AWQC are usually based on consumption of estuarine and freshwater fin fish and shellfish. The inclusion of salmon in the overall consumption rate is generally not recommended in the AWQC Human Health Methodology. However Oregon did include salmon in the overall consumption rate used to develop Oregon's AWQC. The inclusion of salmon might also be appropriate if it was demonstrated that salmon spent a large part of their life cycle in Cook Inlet.

I don't know whether any type of site specific risk assessment is used in the permitting process, however these rates might be useful to begin formulating a risk analysis.

Per Capita Consumption Rates for Alaska Native Villages on Cook Inlet								
Source:	http://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=main.home							
	Village:							
Pounds per year	Kenai	Tyonek	Nanwalek	Port Graham	Seldovia			
salmon	38.73	186.60	292.57	264.40	64.30			
non-salmon	16.31	5.01	58.09	150.40	43.60			
marine invertebrates	5.08		15.44	12.00	34.00			
marine mammals	0.59	2.56	8.72	17.40	1.22			
Totals:	60.71	194.17	374.83	444.20	143.12			
Grams per day								
salmon	48.1	231.6	363.1	328.1	79.8			
non-salmon	20.2	6.2	72.1	186.6	54.1			
marine invertebrates	6.3	0.0	19.2	14.9	42.2			
marine mammals	0.7	3.2	10.8	21.6	1.5			
Totals:	75.34	240.97	465.16	551.26	177.61			
Grams per day assuming 50% conversion adjustment to as consumed weights								
salmon	26.0	125.0	196.1	177.2	43.1			
non-salmon	10.9	3.4	38.9	100.8	29.2			
marine invertebrates	3.4	0.0	10.3	8.0	22.8			
marine mammals	0.4	1.7	5.8	11.7	0.8			
Totals:	40.68	130.12	251.19	297.68	95.91			

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